FIG. 1

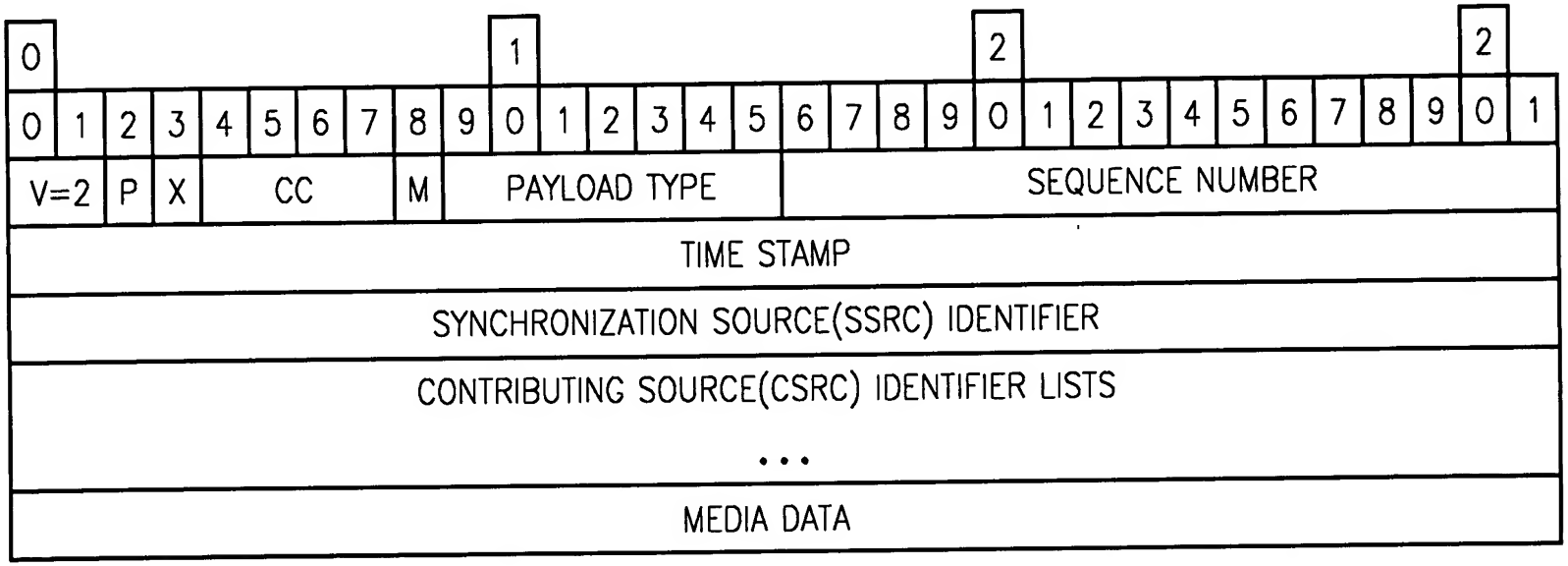

0
1
2
2
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
V=2
P
X
CC
M
PAYLOAD TYPE
SEQUENCE NUMBER
TIME STAMP
SYNCHRONIZATION SOURCE(SSRC) IDENTIFIER
CONTRIBUTING SOURCE(CSRC) IDENTIFIER LISTS
...
MEDIA DATA

FIG. 2

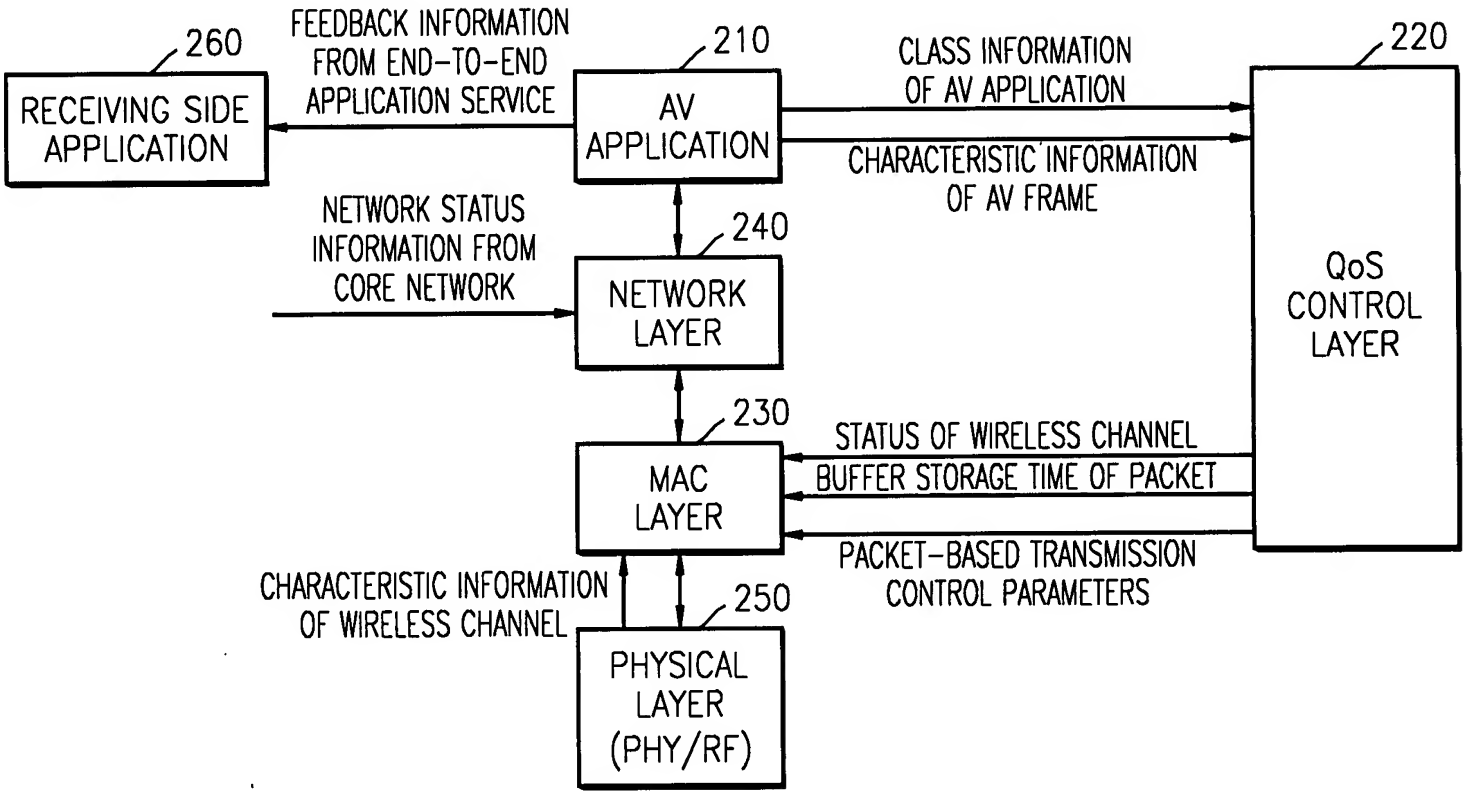

260
RECEIVING SIDE APPLICATION
FEEDBACK INFORMATION FROM END-TO-END APPLICATION SERVICE
210
AV APPLICATION
CLASS INFORMATION OF AV APPLICATION
CHARACTERISTIC INFORMATION OF AV FRAME
220
QoS CONTROL LAYER
NETWORK STATUS INFORMATION FROM CORE NETWORK
240
NETWORK LAYER
230
MAC LAYER
STATUS OF WIRELESS CHANNEL
BUFFER STORAGE TIME OF PACKET
PACKET-BASED TRANSMISSION CONTROL PARAMETERS
CHARACTERISTIC INFORMATION OF WIRELESS CHANNEL
250
PHYSICAL LAYER (PHY/RF)

FIG. 3

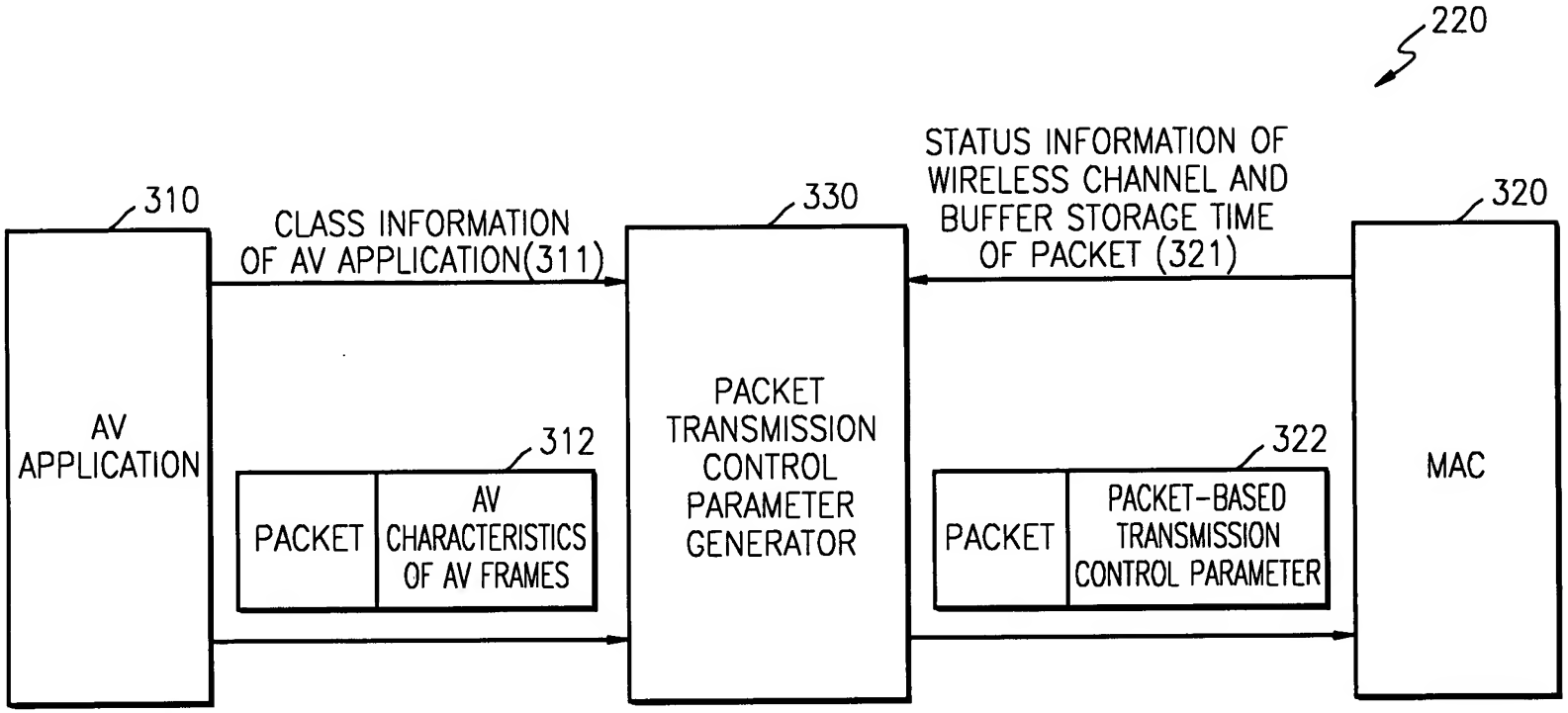

220
310
AV APPLICATION
CLASS INFORMATION OF AV APPLICATION(311)
312
PACKET
AV CHARACTERISTICS OF AV FRAMES
330
PACKET TRANSMISSION CONTROL PARAMETER GENERATOR
STATUS INFORMATION OF WIRELESS CHANNEL AND BUFFER STORAGE TIME OF PACKET (321)
322
PACKET
PACKET-BASED TRANSMISSION CONTROL PARAMETER
320
MAC

FIG. 4

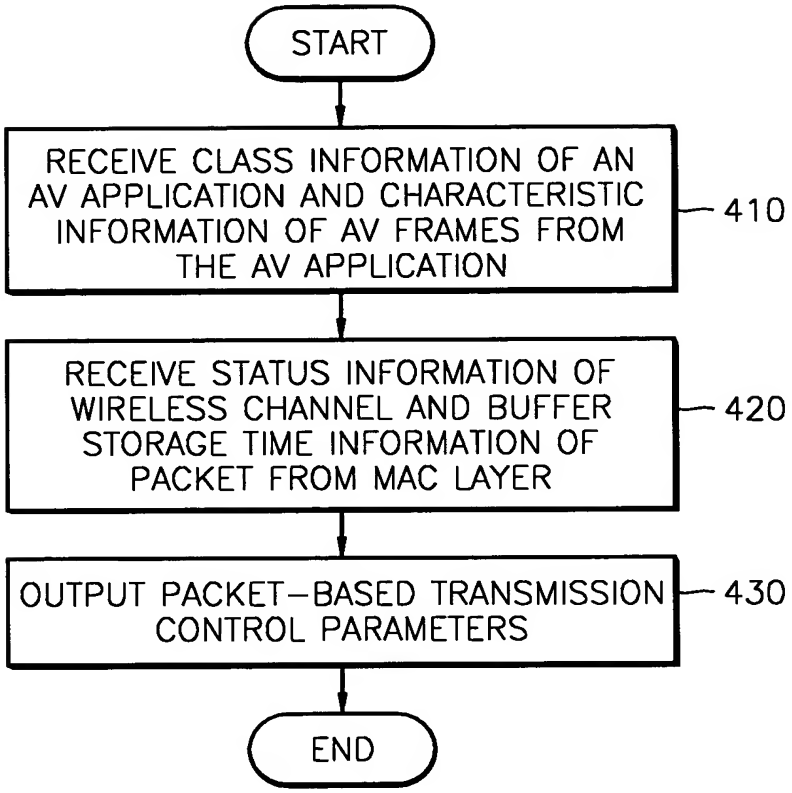

START
RECEIVE CLASS INFORMATION OF AN AV APPLICATION AND CHARACTERISTIC INFORMATION OF AV FRAMES FROM THE AV APPLICATION
410
RECEIVE STATUS INFORMATION OF WIRELESS CHANNEL AND BUFFER STORAGE TIME INFORMATION OF PACKET FROM MAC LAYER
420
OUTPUT PACKET-BASED TRANSMISSION CONTROL PARAMETERS
430
END

FIG. 5

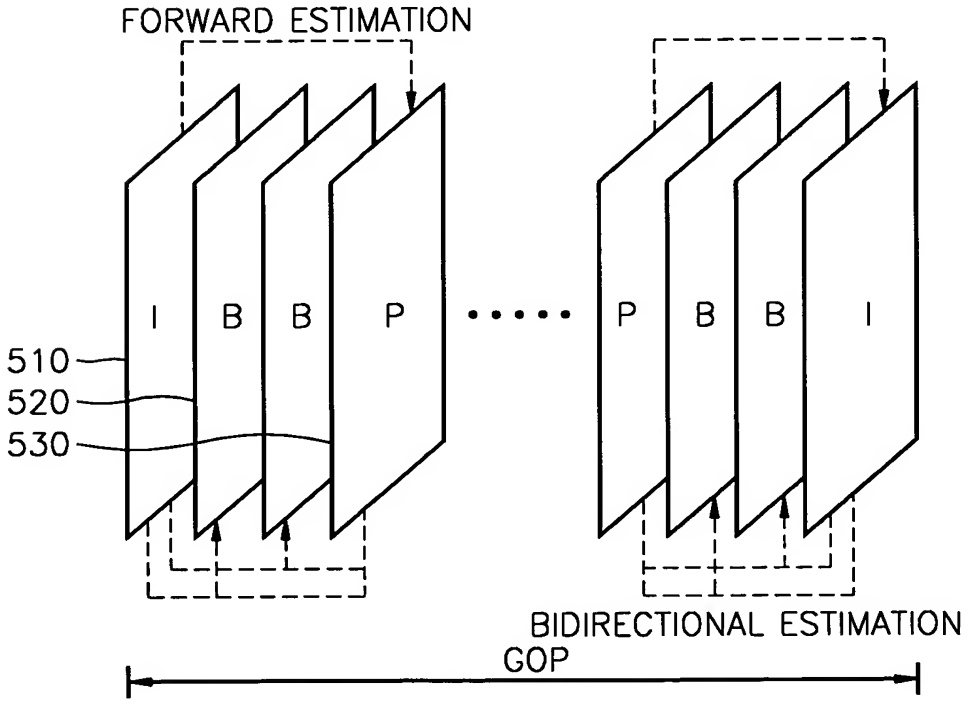

FORWARD ESTIMATION
I
B
B
P
P
B
B
I
510
520
530
BIDIRECTIONAL ESTIMATION
GOP

FIG. 6

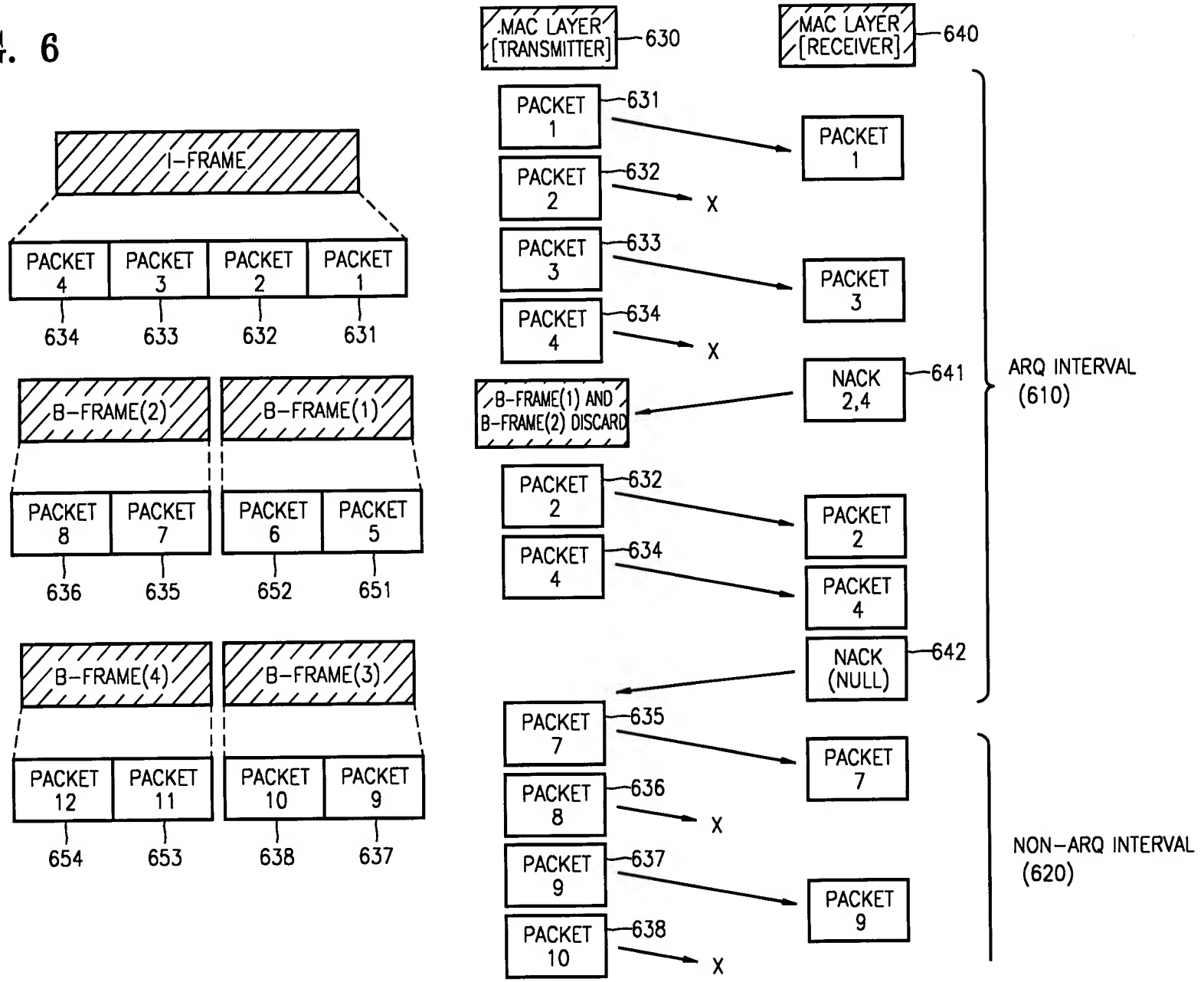

I-FRAME
PACKET 4
PACKET 3
PACKET 2
PACKET 1
634
633
632
631
B-FRAME(2)
B-FRAME(1)
PACKET 8
PACKET 7
PACKET 6
PACKET 5
636
635
652
651
B-FRAME(4)
B-FRAME(3)
PACKET 12
PACKET 11
PACKET 10
PACKET 9
654
653
638
637
MAC LAYER [TRANSMITTER]
630
MAC LAYER [RECEIVER]
640
PACKET 1
631
PACKET 2
632
X
PACKET 3
633
PACKET 4
634
X
B-FRAME(1) AND B-FRAME(2) DISCARD
NACK 2,4
641
ARQ INTERVAL (610)
PACKET 2
632
PACKET 4
634
NACK (NULL)
642
PACKET 7
635
PACKET 8
636
X
PACKET 9
637
PACKET 10
638
X
NON-ARQ INTERVAL (620)

FIG. 7A

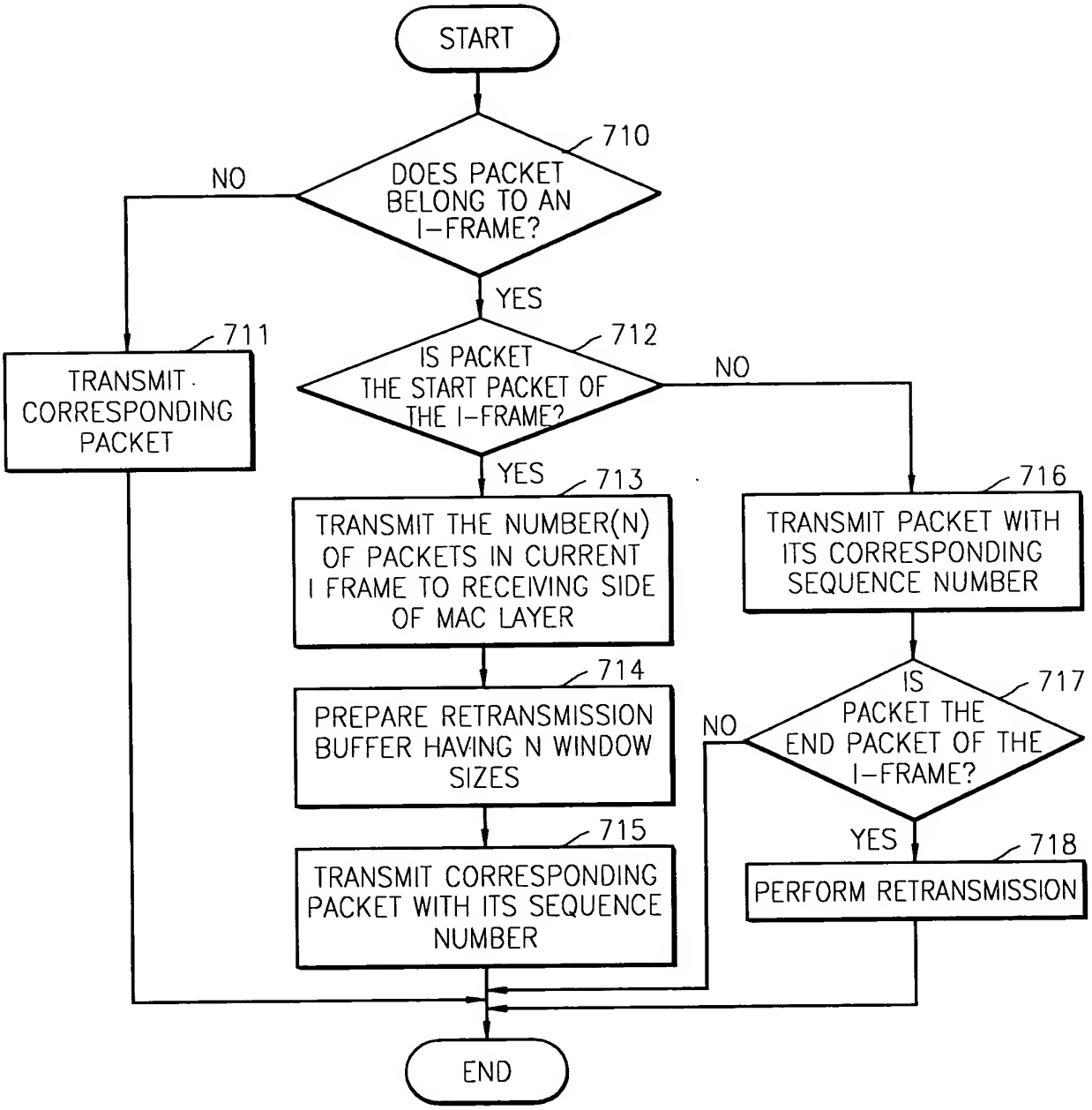

START
710
DOES PACKET BELONG TO AN I-FRAME?
NO
YES
711
TRANSMIT CORRESPONDING PACKET
712
IS PACKET THE START PACKET OF THE I-FRAME?
NO
YES
713
TRANSMIT THE NUMBER(N) OF PACKETS IN CURRENT I FRAME TO RECEIVING SIDE OF MAC LAYER
714
PREPARE RETRANSMISSION BUFFER HAVING N WINDOW SIZES
715
TRANSMIT CORRESPONDING PACKET WITH ITS SEQUENCE NUMBER
716
TRANSMIT PACKET WITH ITS CORRESPONDING SEQUENCE NUMBER
717
IS PACKET THE END PACKET OF THE I-FRAME?
NO
YES
718
PERFORM RETRANSMISSION
END

FIG. 7B

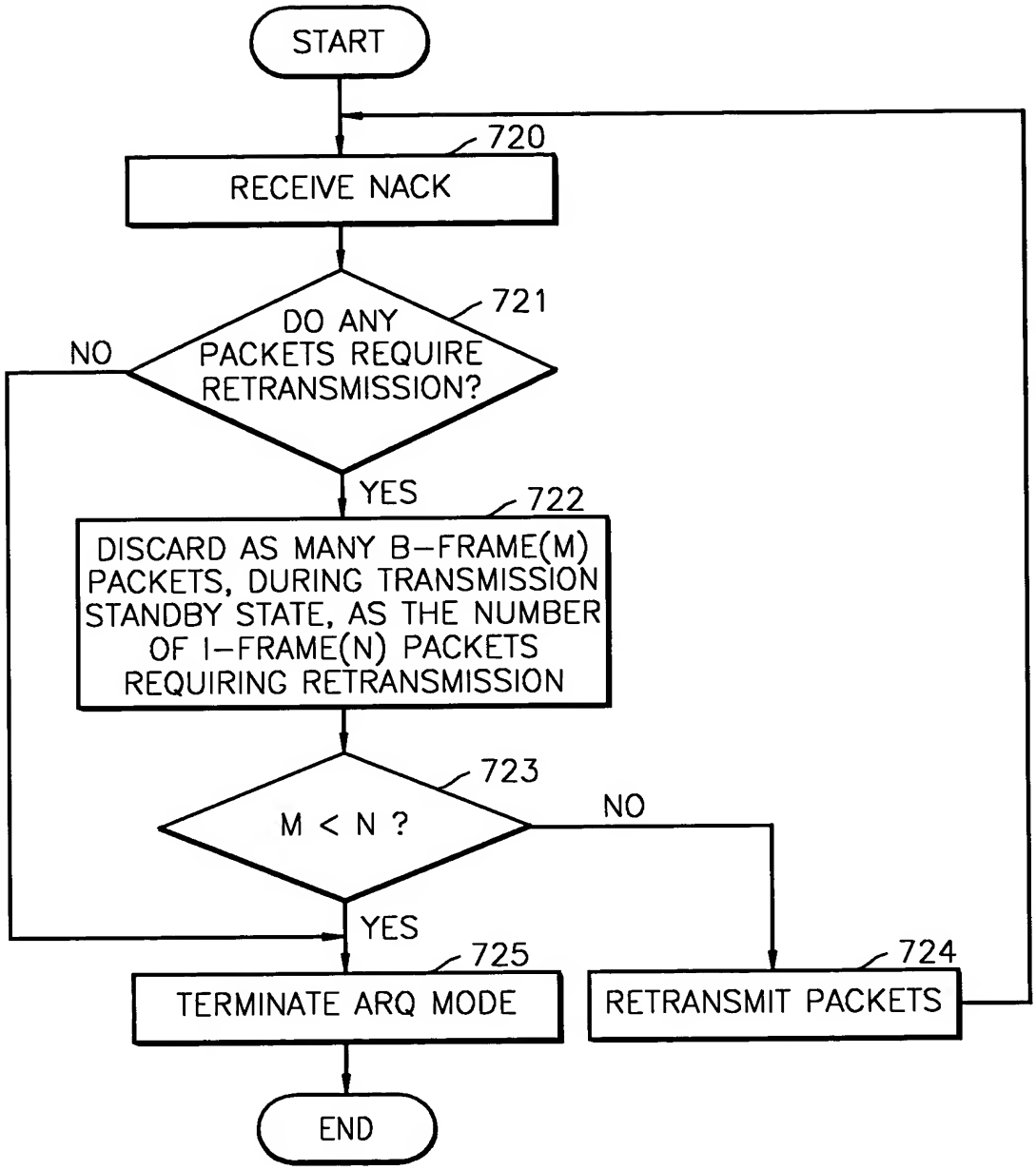

START
720
RECEIVE NACK
721
DO ANY PACKETS REQUIRE RETRANSMISSION?
NO
YES
722
DISCARD AS MANY B-FRAME(M) PACKETS, DURING TRANSMISSION STANDBY STATE, AS THE NUMBER OF I-FRAME(N) PACKETS REQUIRING RETRANSMISSION
723
M < N ?
NO
YES
725
TERMINATE ARQ MODE
724
RETRANSMIT PACKETS
END

FIG. 8

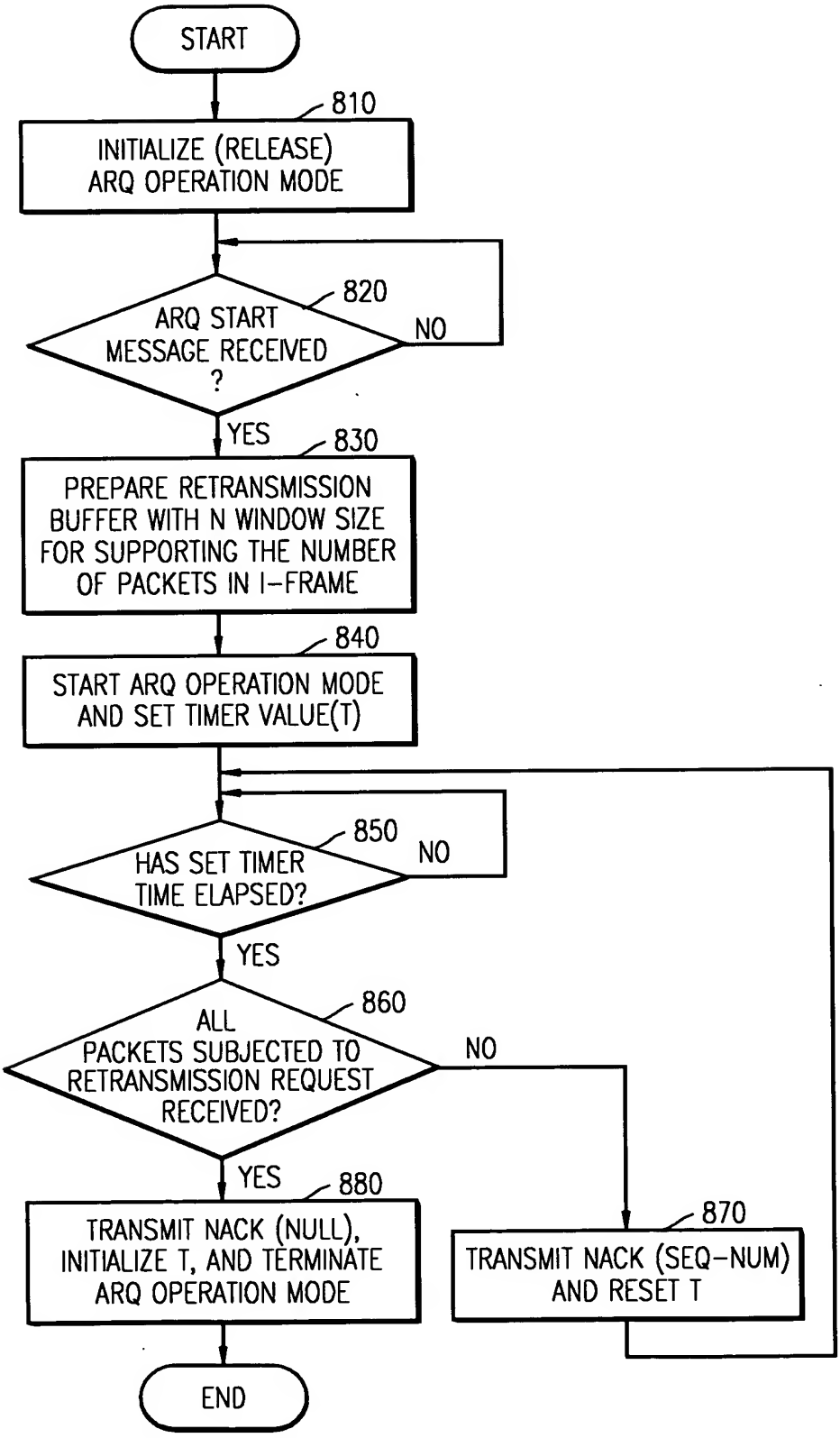
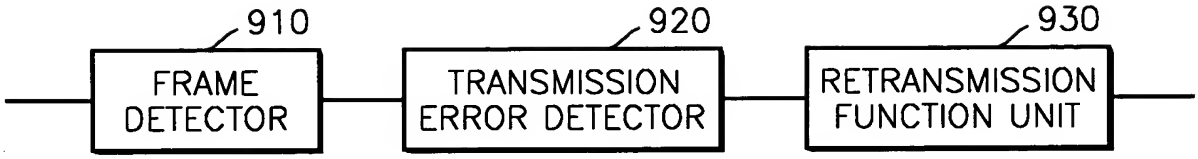

START
810
INITIALIZE (RELEASE) ARQ OPERATION MODE
820
ARQ START MESSAGE RECEIVED ?
NO
YES
830
PREPARE RETRANSMISSION BUFFER WITH N WINDOW SIZE FOR SUPPORTING THE NUMBER OF PACKETS IN I-FRAME
840
START ARQ OPERATION MODE AND SET TIMER VALUE(T)
850
HAS SET TIMER TIME ELAPSED?
NO
YES
860
ALL PACKETS SUBJECTED TO RETRANSMISSION REQUEST RECEIVED?
NO
YES
880
TRANSMIT NACK (NULL), INITIALIZE T, AND TERMINATE ARQ OPERATION MODE
870
TRANSMIT NACK (SEQ-NUM) AND RESET T
END

FIG. 9


910
FRAME DETECTOR
920
TRANSMISSION ERROR DETECTOR
930
RETRANSMISSION FUNCTION UNIT